

From: Morris, Katie [Katie.Morris@mt.gov]
Sent: 11/15/2018 10:14:13 PM
To: Dick Sloan [rsloan@mt.gov]
CC: Balliew, Carolina [Carolina.Balliew@mt.gov]; Terri Mavencamp [TMavencamp2@mt.gov]
Subject: CFAC BERA WP Comments

Hi Dick,

Below are some comments on the CFAC Eco Risk Assessment Work Plan for you to incorporate into a formal letter to EPA. These comments are in response to the October 25, 2018 submittal and not the revised version you received today. If you have any questions please let me know.

Page 13, Section 3.3.3, Fate and Transport Pathways, fourth paragraph: Please include the following sentence at the end of this paragraph "Cyanide in groundwater discharged to surface water may also volatilize off as hydrogen cyanide. PAH may also volatilize. Constituents in groundwater discharged to surface water may also be assimilated by bacteria and plants." Also, please ensure these pathways are addressed in the Risk Assessment Report.

Page 14, Section 3.3.3, Fate and Transport Pathways, first half paragraph on page: Please note that the Smolders study looked at Cd, Cu, Co, Ni, Pb and Zn under specific conditions and did not draw blanket conclusions for all metals and conditions. Site specific bioavailability would need to be determined.

Page 14, Section 3.3.4.1: Please include a discussion in the Risk Assessment Report on whether the concentrations of cyanide present would inhibit fish movement.

Page 19, Section 3.3.7.1, Cyanide, 3rd paragraph on page: Cyanide exposure in the aquatic environment can also occur through the inhalation of volatilized hydrogen cyanide. Please discuss this as an exposure pathway in this paragraph and evaluate this pathway in the Risk Assessment Report.

Page 22, Section 3.3.7.3 Polycyclic Aromatic Hydrocarbons: Please include a discussion regarding PAH's toxicity to fish, specifically the Bull Trout.

Page 24, Section 4.1: Montana DEQ requires the measurement of total metals for surface water aquatic life standards (except for aluminum) therefore these metals should continue to be measured as total.

Page 40, Section 4.2.2.1, Aquatic Exposure Areas: DEQ-7 aquatic life surface water standards are measured in total recoverable, except for Aluminum. This is a conservative measure and in the case of cyanide is to account for potential degradation of metal-cyanide complexes. Please ensure that metals and cyanide continue to be monitored as the total recoverable fraction.

Page 46, Section 5.1.1.2, Surface Water: DEQ has the following comments regarding this section:

- Effects associated with direct contact should be determined by comparing to DEQ-7 surface water aquatic life standards. MDEQ Aquatic life Water Quality Standards should be considered default and in their absence, effects associated with direct contact should be evaluated based on literature/database review, or where warranted a site-specific recalculation procedure should be followed (EPA, 2013).
- Free cyanide represents the toxic form of cyanide, metal cyanide complexes represent the potentially bioavailable /toxic form of cyanide.
- Third paragraph: Surface water standards for metals in Montana are based on total not dissolved (except aluminum). We expect that cyanide will be measured and compared to standards as total recoverable. Some standards are a function of hardness, most are not. Cyanide aquatic life standards (EPA/MT) is not a hardness-based metal and the hardness-based Al aquatic life standard is in draft form (EPA, 2017). At this point, we would need more information to agree to moving forward using hardness-based numbers.

- Third paragraph bullet points: Free cyanide is potentially toxic (depending on concentration and available receptors) but metal cyanides are also potentially toxic depending on environmental conditions. Please revise “Free cyanide: Represents the bioavailable and potentially toxic form of cyanide” to “Free cyanide and cyanide complexes (metal, organic) represent the potentially toxic form of cyanide and free cyanide the bioavailable form.”

Katie Morris | Risk Assessor

Cleanup, Protection, & Redevelopment Section

Waste Management & Remediation Division

New Phone: 406.541.9017

katie.morris@mt.gov

